

# Computer Algorithms - Approximate Syllabus

## CSCI 4020 (Spring 2007)

This course teaches general techniques for designing and analyzing algorithms. The exact coverage is subject to change.

**Introduction:** Stable matchings, some representative problems, and the basics of algorithm design.

**Greedy Algorithms:** General greedy techniques, minimum spanning trees

**Divide and Conquer**

**Dynamic Programming:** Weighted interval scheduling, knapsack, and many applications.

**Flows and Cuts in Networks:** Max-flow Min-cut Theorem, augmenting paths, basic applications.

**Applications of Flows:** Extensions of flows to more general models, more advanced applications.

**Computational Hardness, Reductions, and NP-Completeness**

**Algorithms for Hard Problems:** Approximation Algorithms, Randomized Algorithms, Local Search